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July 27, 1998

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES



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Typical Report Citation and Abstract

- ❶ 19970001126 NASA Langley Research Center, Hampton, VA USA
- ❷ **Water Tunnel Flow Visualization Study Through Poststall of 12 Novel Planform Shapes**
- ❸ Gatlin, Gregory M., NASA Langley Research Center, USA Neuhart, Dan H., Lockheed Engineering and Sciences Co., USA;
- ❹ Mar. 1996; 130p; In English
- ❺ Contract(s)/Grant(s): RTOP 505-68-70-04
- ❻ Report No(s): NASA-TM-4663; NAS 1.15:4663; L-17418; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche
- ❼ To determine the flow field characteristics of 12 planform geometries, a flow visualization investigation was conducted in the Langley 16- by 24-Inch Water Tunnel. Concepts studied included flat plate representations of diamond wings, twin bodies, double wings, cutout wing configurations, and serrated forebodies. The off-surface flow patterns were identified by injecting colored dyes from the model surface into the free-stream flow. These dyes generally were injected so that the localized vortical flow patterns were visualized. Photographs were obtained for angles of attack ranging from 10° to 50°, and all investigations were conducted at a test section speed of 0.25 ft per sec. Results from the investigation indicate that the formation of strong vortices on highly swept forebodies can improve poststall lift characteristics; however, the asymmetric bursting of these vortices could produce substantial control problems. A wing cutout was found to significantly alter the position of the forebody vortex on the wing by shifting the vortex inboard. Serrated forebodies were found to effectively generate multiple vortices over the configuration. Vortices from 65° swept forebody serrations tended to roll together, while vortices from 40° swept serrations were more effective in generating additional lift caused by their more independent nature.
- ❽ Author
- ❾ *Water Tunnel Tests; Flow Visualization; Flow Distribution; Free Flow; Planforms; Wing Profiles; Aerodynamic Configurations*

Key

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3. Author(s) and Affiliation(s)
4. Publication Date
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AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 470)

JULY 27, 1998

52 AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

19980137589 Health Effects Inst., Cambridge, MA USA

Effects of Ozone on Normal and Potentially Sensitive Human Subjects

Jun. 1997; 116p; In English

Report No.(s): PB98-138563; HEI/RR-78; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

Contents include the following: Airway Inflammation and Responsiveness to Ozone in Normal and Asthmatic Subjects; Airway Inflammation and Responsiveness to Ozone in Nonsmokers and Smokers; Mediators of Inflammation in Bronchoalveolar Lavage Fluid from Nonsmoker and Smokers; and Asthmatic Subjects Exposed to Ozone: A Collaborative Study; and Includes the Commentary of the Institute's Health Review Communities.

NTIS

Ozone; Air Pollution; Public Health

19980137618 National Inst. of Health, National Eye Inst., Bethesda, MD USA

National Eye Institute Annual Report, Fiscal Year 1995

1995; 383p; In English

Report No.(s): PB96-206008; No Copyright; Avail: CASI; A17, Hardcopy; A03, Microfiche

The Annual Report contains highlights of extramural research supported by the National Eye Institute, reports of NEI staff offices and intramural laboratories, and progress reports of individual NEI intramural research projects. A review of these reports shows that FY 1995 was productive for both the NEI and the research scientists it supports.

NTIS

Eye Diseases; Epidemiology; Eye (Anatomy)

19980137709 ROW Sciences, Inc., Gaithersburg, MD USA

Reproductive Toxicity of Potassium Dichromate (Hexavalent) (CAS No. 7778-50-9) Administered in Diet to BALB/c Mice Final Report

Jan. 10, 1997; 183p; In English

Report No.(s): PB97-125363; RACB95002; No Copyright; Avail: CASI; A09, Hardcopy; A02, Microfiche

The potential testicular toxicity of potassium dichromate (hexavalent) was evaluated in BALB/c mice. Potassium dichromate (hexavalent) was administered at dose levels of 0, 15, 50, 100, and 400 ppm in the diet for nine weeks followed by an eight week recovery (potassium dichromate free) period. Interim necropsies occurred after 3, 6, and 9 weeks of administration and a terminal necropsy occurred following Week 17. Endpoints included body weights, feed and water consumption, organ weights, microscopic evaluation of the liver, kidney, and ovaries, hematology histology of the testis and epididymis for Sertoli nuclei and preleptotene spermatocyte counts in Stage X or XI tubules, and chromatin analysis. There was a slight decrease in mean body weights in the 400 ppm males (5-9%) and females (4%) and the 100 ppm females (2-4%) during the dosing periods. Feed consumption was generally increased in all treated groups especially the 400 ppm males and females. During the recovery period, feed consumption was comparable across groups. The achieved dose levels were approximately 4 mg/kg/day in the 15 ppm group, 13 mg/kg/day in the 50 ppm group, 28 mg/kg/day in the 100 ppm group, and 115 mg/kg/day in the 400ppm group.

NTIS

Toxicity; Reproduction (Biology); Potassium; Evaluation; Gametocytes

19980137710 ROW Sciences, Inc., Gaithersburg, MD USA

Reproductive Toxicity of Potassium Dichromate (Hexavalent) (CAS No. 7778-50-9) Administered in Diet to SD Rats Final Report

Dec. 16, 1996; 184p; In English

Report No.(s): PB97-125355; RACB95001; No Copyright; Avail: CASI; A09, Hardcopy; A02, Microfiche

The potential reproductive toxicity of potassium dichromate (hexavalent) was evaluated in Sprague-Dawley rats. Potassium dichromate (hexavalent) was administered at dose levels of 0, 15, 50, 100, and 400 ppm in the diet for nine weeks followed by an eight week recovery (potassium dichromate free) period. Interim necropsies occurred after 3, 6, and 9 weeks of administration and a terminal necropsy occurred following Week 17. There were no treatment-related findings noted in mean body weights, water and feed consumption, organ weights, microscopic evaluation of the liver, kidneys, and ovaries, and hematology findings except for decreases in Mean Corpuscular Volume (MCV) and Mean Corpuscular Hemoglobin (MCH) values in the 400 ppm males and females. These decreases suggest a possible bone marrow/erythroid response. These values returned to normal levels following the recovery period.

NTIS

Toxicity; Potassium; Chromates; Bone Marrow; Reproduction (Biology)

19980162984 Institute for Human Factors TNO, Soesterberg, Netherlands

Development of a Generic Didactic Model for Simulator Training Interim Report Ontwikkeling van een generiek didactisch model voor simulatortraining

vanEmmerik, M. L., Technische Hogeschool, Netherlands; vanJoolingen, W. R., Technische Hogeschool, Netherlands; vanRooij, J. C. G. M., Institute for Human Factors TNO, Netherlands; Nov. 07, 1997; 26p; In English

Contract(s)/Grant(s): B97-033

Report No.(s): TM-97-B022; TD97-0252; Copyright; Avail: Issuing Activity (TNO Human Factors Research Inst., Kampweg 5, 3769 DE Soesterberg, The Netherlands); US Sales Only, Hardcopy, Microfiche

With advances in simulation technology, simulators are increasingly used as a medium for training and instruction. This report contains a description of a proposal for a research project aimed at the development of a generic didactic model for training simulators; notably as it applies to learning requisite skills for performing high-performance tasks. A didactic model specifies the relation between learning, and training and instruction factors. The development of such a model is motivated by the need to control training and instruction factors in research on simulator fidelity, the need to assess the benefit of training simulators, e.g., relative to other training media, and the need for developing more efficient instructional systems to support simulator-based training and instruction. For several reasons, it is proposed to focus the empirical work on tutoring aspects associated with car driving skills.

Author

Training Simulators; Systems Simulation; Education; Simulators

19980163016 Massachusetts Inst. of Tech., Cambridge, MA USA

A Model for Surface Flow in Cartilage

Kenyon, Douglas E., Massachusetts Inst. of Tech., USA; Journal of Biomechanical Engineering; 1980; ISSN 0021-9290; Volume 13, pp. 129-134; In English

Contract(s)/Grant(s): NIH-5-RO1-AM-16116; Copyright; Avail: Issuing Activity (Massachusetts Inst. of Tech., Cambridge, MA 02139), Hardcopy, Microfiche

The creep behavior of articular cartilage in joints when loaded in compression depends on the availability of a path for flow between the cartilage surfaces. Normal waviness in surface contour seen in unloaded cartilage which persists to some extent during compression can provide a meandering path for fluid flow along the loaded surface. An idealized model can be used to determine when this surface flow becomes less favourable than a flow predominantly parallel but entirely within the cartilage. The model also estimates the pressure of liquid in this film in comparison to the deep tissue liquid pressure.

Author

Cartilage; Fluid Flow; Creep Properties; Fluid Films; Surface Properties; Pressure Measurement; Stress Distribution; Flow Resistance

19980185805 National Inst. of Health, Office of Research on Women's Health, Bethesda, MD USA

NIH Handbook for Postdoctoral Fellows

1998; 206p; In English

Report No.(s): PB98-140213; No Copyright; Avail: CASI; A10, Hardcopy; A03, Microfiche

The NIH Postdoctoral IRTA Program is designed to provide advanced training and practical research experience to physicians and Ph.D.-level investigators who are at the beginning stages of their professional research careers. Participants will engage in research studies under the direction of preceptors and will apply their newly-gained knowledge and enhance their research skills through participation in on-going research investigations. Postdoctoral Fellows receive training and engage in experimental activities in a variety of laboratory and clinically-related disciplines. They may not engage in primary patient care activities. Physicians who meet the programmatic and qualification requirements should be considered for appointment as Clinical Fellows.

NTIS

Research and Development; Qualifications; Education

53

BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

19980137609 Georgia Inst. for Research, Atlanta, GA USA

Introspective Reasoning Models for Multistrategy Case-Based and Explanation *Final Report, 1 Jan. 1994 - 31 Dec. 1996*

Ram, Ashwin, Georgia Inst. for Research, USA; Mar. 10, 1997; 198p; In English

Contract(s)/Grant(s): F49620-94-I-0092

Report No.(s): AD-A336546; AFRL-SR-BL-TR-98-0153; No Copyright; Avail: CASI; A09, Hardcopy; A03, Microfiche

On the technical front, we have been working towards using the StatLady system as the starting point for implementing our own ideas. by using StatLady, we can make use of the system's large body of domain information, its capacity for evaluating a student's comprehension of a large number of definitions, procedures, and skills related to statistics, and its tutoring algorithms. We are exploring several options for an interface, including Visual Basic, the language of the original StatLady system. On the theoretical side, we have focussed on designing our planning to tutor module, based on the PLUTO planning to learn system, for augmenting StatLady along the lines of our proposal. Our extension builds on the strengths of StatLady by expanding the way StatLady represents the student model, the way it creates a lesson plan, and the flexibility it has to adapt a lesson plan as student performance deviates from the student model's predictions.

DTIC

Algorithms; Data Conversion Routines

19980137611 Illinois Univ., Springfield, IL USA

The Resolution and Performance Effects of Three-Dimensional Display Rotation on Local Guidance and Spatial Awareness Measures

Boeckman, Kyle Jason, Illinois Univ., USA; Jan. 30, 1998; 104p; In English

Report No.(s): AD-A336673; Rept-97-163; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

Computer technology has made it possible for the traditional paper map to be replaced with a realistic, three dimensional, easily updated picture of the world. Possibilities abound as to exactly how this new computer map should be designed and implemented for use in aviation. what kinds of tasks should such a map support? Should the map depict the pilot's viewpoint or should the aircraft be viewed from a distance? If from a distance, how far and from what angle should the ownship be presented? In the present research we intend to give insight to the answers to some of these questions by investigating manipulations of two important properties of three dimensional displays (their elevation and azimuth angle), and assessing how these manipulations influence performance or interact across aviation relevant tasks. We will begin by describing three categories of navigational tasks. Next, we will describe a general model of three dimensional space and the biases created by perspective viewing, and will continue with a review of the research that has addressed these subjects.

DTIC

Computer Systems Design; Display Devices; Elevation Angle

19980163017 Lockheed Martin Manned Space Systems, New Orleans, LA USA

Marketing Training

Leonard, Eric, Lockheed Martin Manned Space Systems, USA; 1998; 9p; In English

Report No.(s): NASA/CR-1998-208135; NAS 1.26:208135; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

All of our ideas have been field tested and have proven effective in our environment. Our objectives are: We will share our ideas about marketing training and what we've implemented at Michoud Space Systems. You will go away with at least one new idea or insight about how to more effectively market your training.

Derived from text

Aerospace Systems; Education; Marketing

54

MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing. For related information see also 16 Space Transportation.

19980162982 Institute for Human Factors TNO, Soesterberg, Netherlands

Maximal Allowable Values for Breathing Resistance with Respirators: A Literature Survey *Interim Report Toelaatbare waarden voor ademweerstand met gasmaskers; een literatuur-studie*

Heus, R., Institute for Human Factors TNO, Netherlands; Zeijl, A., Institute for Human Factors TNO, Netherlands; Havenith, G., Institute for Human Factors TNO, Netherlands; Dec. 02, 1997; 36p; In English

Contract(s)/Grant(s): A96/KL/358

Report No.(s): TM-97-A074; TD97-0259; Copyright; Avail: Issuing Activity (TNO Human Factors Research Inst., Kampweg 5, 3769 DE Soesterberg, The Netherlands); US Sales Only, Hardcopy, Microfiche

Respirators protect against polluted air. Depending on the type of respirator and canister the respiration of the wearer will be hindered to a certain degree. Especially the increase in inhalation resistance, dead space values and less important the exhalation. resistance will lead to an increase in physical load when working with a respirator. In this study the situation of the Netherlands military will be the starting point, in other words what is the influence of the use of respirators in the army on the breathing. The use of a mask will lead to a higher physical load and more subjective complaints. The reason for this question was the introduction of a new industrial filter and a new way of wearing the canister. In this case the canister will be worn on the hip instead of on the mask itself. Till now no comparisons are Made to the influence on breathing resistance of a respirator with a canister placed directly on the mask with the same mask with a canister on the hip connected by a hose. Measurements on the hose showed that the breathing resistance of the hose is very low, but changes by moving and bending of the hose. The first question to be studied is if the breathing resistance of the complete system of respirator, canister and hose can be accepted by the subjects during their work. Before allowable breathing resistances will be given for using a respirator, attention must be given to individual differences between the wearers and task characteristics. Maximal values for breathing resistance in the literature and international standards varied between 0.375/kPa-s-1 and 1.0/kPa-s-1, depending on the type of respirator, the ventilation and the accepted discomfort. Research with working subjects must prove if breathing resistance limits will be exceeded with one of the respirators.

Author

Respiration; Ventilation; Respirators; Air Pollution

19980169251 Federal Aviation Administration, Washington, DC USA

Federal Aviation Administration Human Factors Team Report on: Interfaces between Flightcrews and Modern Flight Deck Systems

Jun. 18, 1996; 203p; In English

Report No.(s): PB97-109615; No Copyright; Avail: CASI; A10, Hardcopy; A03, Microfiche

This report is the result of a study of the interfaces between the flightcrew and the automated systems of highly automated airplanes. It primarily focuses on the interfaces that affect flight path management.

NTIS

Flight Crews; Human Factors Engineering; Automatic Pilots; Aircraft Pilots; Pilot Performance; Man Machine Systems; Automatic Flight Control

19980193183 NASA Ames Research Center, Moffett Field, CA USA

Human habitat positioning system for NASA's space flight environmental simulator

Caldwell, W. F., NASA Ames Research Center, USA; Tucker, J., Gates/Arrow Distributing, USA; Keas, P., Sverdrup Technology, Inc., USA; Fortieth Anniversary: Pioneering the Future; May 1998, pp. 367-381; In English; Also announced as 19980193156; No Copyright; Avail: CASI; A03, Hardcopy; A04, Microfiche

Artificial gravity by centrifugation offers an effective countermeasure to the physiologic deconditioning of chronic exposure to microgravity; however, the system requirements of rotational velocity, radius of rotation, and resultant centrifugal acceleration require thorough investigation to ascertain the ideal human-use centrifuge configuration. NASA's Space Flight Environmental Simulator (SFES), a 16-meter (52-foot) diameter, animal-use centrifuge, was recently modified to accommodate human occupancy. This paper describes the SFES Human Habitat Positioning System, the mechanism that facilitates radius of rotation variability and alignment of the centrifuge occupants with the artificial gravity vector.

Author

Environment Simulators; Space Habitats; Flight Simulators; Aerospace Environments; Physiological Effects; Microgravity; Human Centrifuges; Gravitational Physiology; Gravitational Effects; Space Environment Simulation

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